

Hinduism and the Ethics of Human Embryonic Stem Cell Research¹

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Background and Objectives: In vitro fertilization and stem cell research are among the rapidly developing fields in India. In addition to stem cells, human embryonic stem cell research is also becoming very popular. Much of embryo donation for the purpose of research is possible in India because donation of embryos (*bhrūṇadāna*) is “thought of” as sanctioned by the religion, and such an act is not thought of as killing but sacrifice for the sake of good of the society. The current paper seeks to address whether the same religious principle can be applied when it comes to human embryonic stem cells.

Methods: The popular views on the basis of the *Bhagavadgītā*, and the *Mahābhārata* are presented first and analysed. Arguments are provided against these on the basis of *smṛti* texts and narratives.

Results: The above analysis shows that human embryonic stem cell research has no sanction in Hinduism.

Interpretation and Conclusion: It is interpreted that according to Hinduism, the donation of embryos for research amounts to homicide. It is recommended to focus research to improve the pluripotentiality of adult and cord blood stem cells, and if possible to create only the required number of embryos that have to be planted in the woman's womb. If this is not practical, it is recommended to leave the excess embryos instead of disseminating them in the name of research. However, given the popularity of human embryonic stem cell research, it is concluded that it is possible to say that just as the voice of Hinduism has gone unheard in the case of abortion, the same might happen in this case as well.

Keywords: Humanembryonic stem cells. hinduism. india.

In vitro fertilization and stem cell research are among the rapidly developing fields in India. This paper explores the Hindu religious perspective on human embryonic stem cell research (HESCR)

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which has heretofore been presented by analyzing Hindu scriptures and law books.

The following passage might serve as a rudimentary delineation of stem cells and HESCR:

Stem cells are unspecialized, undifferentiated cells that have the capacity to develop into cells of different kinds of tissue or organs. Stem cells are, in other words, cells at a very early stage of their developmental life. They can be induced to develop into specific cell types, such as nerve cells or muscle cells. There is nothing intrinsically controversial about stem cells. They occur naturally. They have also been used for therapeutic purposes for many years: bone-marrow transplants for the treatment of leukaemia depends on the capacity of stem cells in the bone marrow to turn into various lines of blood cells. Stem cells have attracted a degree of controversy, however, because of the use of embryonic stem cells. Cells derived from the earliest stages of foetal development have the capacity to develop into any tissues and therefore provide scientists with the opportunity to grow cell-lines that can be used for research purposes, and to grow tissues (such as corneas and cartilage) that can be used in regenerative medicine. Human embryonic stem cells (hESCs)(sic) have been derived from 'spare' embryos created in the course of IVF treatment and not needed for implantation into the women's womb. Such embryos may then be donated by the couple who were receiving the IVF treatment for the purposes of scientific and medical research.¹

Because there is a philoprogenitive societal expectation on the part of a woman to bear children, IVF flourishes in India. Consequently, HESCR also is rapidly developing. The Government of India, while investing more money in HESCR, allows spare embryos, less than fourteen days old, to be used in research. In addition to government regulation, much of embryo donation for the purpose of research is possible in India because the Hindu idea of donation (*dāna*) is deeply rooted. Donation of food, money, and clothes to the needy is praised in the Hindu scriptures as bringing good results to the donor in this life and beyond. In the same light, donation of embryos (*bhrūṇadāna*) is "thought of" as sanctioned by the religion, and such an act is not thought of as killing but sacrifice for the sake of good of the society. The following excerpts succinctly address

this issue at hand:

[I]f something from your body can heal and benefit, then it is truly good, it is very good, why turn that into politics? So if you can save someone using my body, it is very good, it is not killing! Indian culture says if my body can benefit you, I can sacrifice my body. If we can save someone through the sacrifice of donating an embryo (*bhruna daan*), (sic) then it is good and imbued with a lot of religious merit.²

The notion of sacrifice, therefore, is one rooted in the self and cannot be recast to mean killing of an 'other'. The idea of sacrifice in India, both as bodily and spiritual practice, is ingrained in everyday cultural idioms, conventions, kinship norms, familial obligations and other social practices. Intimate connections between the body and sacrifice are continually reemphasized through story telling, resurrected myths, and, more recently, through mass media and popular culture.³

Before dredging up the Hindu perspective on HESCR, it is worth clarifying that it is true that Hinduism commends the act of donation and saving other people's lives. From this perspective, Hinduism will not be against the extraction of cord blood stem cells or adult stem cells derived from bone marrow, peripheral blood, tissues and so on or their use in treatment. Likewise, Hindu ethical principles do encourage research on adult and cord blood stem cells for the benefit of humanity. The pertinent question here is whether the same religious principle can be applied when it comes to human *embryonic* stem cells, which the current paper seeks to address.

Aditya Bharadwaj and Peter Glasner, in their *Local Cells, Global Science: The Rise of Embryonic Stem Cell Research in India*, delineate the various Hindu perspectives on the issue at hand. They record the admonition of Jayendra Sarasvatī, the Śaṅkarācārya of Kāñcī that abortion, artificial insemination and test tube babies are "sinful acts" and are totally unacceptable. It is because life starts from the stage of embryonic stem cell.⁴ As against this, the views in favor of HESCR may be presented as follows:

1. The Hindu scripture, the *Bhagavadgītā*, describes the soul as eternal and indestructible.

Hence HESCR, which results from the destruction of embryos, need not be abhorrent to Hindus, as the soul cannot be destroyed anyway.

2. Hindu mythology provides us with the story of sage Dadhīci, who sacrificed his body so that the gods could build a demon-destroying weapon with his bones. Such an act is seen as a sacrifice for the welfare of the greater good and not suicide. In the same way, destruction of embryos in stem cell research can be seen as an extraordinary act, performed for the sake of the greater good.

3. The Hindu epic, *Mahābhārata*, describes the birth of Kauravas, the primary characters of the epic, from stem cells.⁵

Thus, these views give the opinion that Hinduism supports HESCR. These views are now analyzed in the light of Hindu scriptures, law books and narratives.

I: The View of the *Bhagavadgītā*

Before entering into the discussion about the statement from the *Bhagavadgītā* (*Gītā* in short), an outline of the Hindu concept of *karma*, rebirth, personhood, and the description of the foetus in the womb might be helpful.

According to Hinduism, individual souls (*jīvas*) take birth depending on the results of their own actions called *karma*. Driven by the results of their own good and bad *karmas*, souls are born as animals, birds, insects, plants, or human beings. The person (soul), according to Hinduism, enters the sperm of the father in a subtle form and develops the gross body in the mother's womb. This constitutes the continuous cycle of transmigration (*samsāra*), and an end to this *samsāra* occurs after numerous births, when the individual realizes one's Self. Such a realization leads one to the state which liberates one from future births. The *Gītā* describes this process by the analogy of a person changing various clothes. Readers may now be able to understand the thrust in Jayendra Sarasvatī's statement that from the stage of embryonic stem cell, life starts. After this brief observation, a description of the foetus in the womb, as experiencing various sufferings (*garbha-duḥkha*) as given in the classical Hindu texts, is presented below:

The *Viṣṇu Purāṇa* says:

An individual soul (*jantu*), possessing a subtle body (*sukumāratantu*), resides in his mother's womb (*garbha*), which is imbued with various sorts of impurity (*mala*). He stays there being folded in the membrane surrounding the foetus (*ulba*)...He experiences severe pains...tormented immensely by the foods his mother takes...Incapable of extending (*prasāraṇa*) or contracting (*ākuñcana*) his own limbs and reposing amidst a mud of faeces and urine, he is in every way incommoded. He is unable to breathe. Yet, being endowed with consciousness (*sacaitanya*) and thus calling to memory many hundreds (of previous) births, he resides in his mother's womb with great pains, being bound by his previous deeds.

The *Garbha Upaniṣad* elaborates on one aspect of this painful experience:

Now (when the foetus) is complete in every aspect, it remembers its past births. Action pertains to what is done and not done, and (the foetus) thinks upon its good and bad deeds. Having surveyed (previous births from) thousands of different wombs, (it thinks): “Thus have I enjoyed various foods and suckled various teats. Again and again both the living and the dead are reborn. Alas! I am sunk in this ocean of sorrow and see no remedy. Whatever I've done, good or bad, for those about me—I alone must suffer the consequences, for they've gone on their way, suffering the fruits (of their own deeds). If ever I escape the womb I'll study the *Sāṃkhya-Yoga* which destroys evil and confers the reward of liberation. If ever I escape the womb I'll abandon myself to Śiva who destroys evil and confers the reward of liberation.”⁶

Building upon the principle of non-violence (*ahimsā*), which is the cornerstone of Hindu bioethics, both the *śruti* (*Vedas*, the foundational texts of Hinduism) and the *smṛti* (law books) emphasize that pregnant women and the foetus, are entitled to special protection and prescribe various prayers and rites for this purpose. While Viṣṇu is invoked in the *Rgveda* to protect the child in the womb,⁷ the rite of *anavalobhana* or *garbharakṣaṇa* for the sake of protecting the foetus is prescribed in the *smṛti* texts.⁸ In the same light, the *śruti* texts condemn abortion (*bhrūṇahatyā*) and place the act at par with heinous forms of murder.⁹ The *smṛti* texts consider abortion—even if it is the embryo of a

slave—similar to the act of killing a Brahmin, and prescribe severe punishments for such offenses. The punishments include loss of caste, which in traditional times led to one's loss of position and support from one's community, and even deprived one of ancestral libations of water (*udakakriyā*), and involved monetary fines.¹⁰ However, the ancient Hindu surgical text, *Suśruta Saṃhitā*, allows abortion under one condition: when the life of the mother is endangered.¹¹

The following statement by Julius Lipner provides us with the summary of the classical Hindu view of abortion:

A special point to note here is that the production of children was a public duty, rather than a purely individual expression of parental rights and choices. Indeed, one of the traditional debts the householder owed society was maintaining society's numbers by continuing the line in accordance with *dharma*. It would be unHindu, therefore, to regard procreation and concomitant issues (such as abortion) as a private concern of mother (or family) alone. One can understand how in this whole context then—that of the social, economic and religious issues—abortion, in general was condemned.¹²

It is thus important that the prescription of the *Gītā* to engage in the act of killing one's relatives, especially in the context of war while performing one's duty as a warrior, should not be extended in the case of killing embryos for the sake of research, because killing of embryos is not different from abortion. Nowhere does the *Gītā*, which is considered a *smṛti* text, support abortion or killing of embryos.

II: The Analogy of Sage Dadhīci

In the story of sage Dadhīci, it is indeed true that the sage sacrifices his body at the request of the gods. However, it is important to note that such a sacrifice occurs after the gods duly request him and the sage kindheartedly consents to sacrifice his body. Thus the gesture is voluntary and not forced upon the sage. In this light, this act can be viewed as an altruistic gesture for the welfare of the gods. At the same time, this case cannot be considered totally unequivocal in this regard. The narrative further records that the sage's

wife becomes upset at the sacrificial death of her husband and curses the gods in return.

Now the question arises: can this narrative be applied to HESCR or are we comparing apples with oranges here? The question is pertinent because, while there is informed consent in the case of the sage, it is not possible to get the informed consent of the embryo which is being sacrificed. This question may be answered by saying that just as parents decide on behalf of their young children, in the same way they are the rightful decision makers when it comes to donating the embryo for HESCR as well.

This answer may be analyzed by consulting two sources: *smṛti* texts and narratives. It is necessary to clarify at the outset that while there is enough discussion on the subject of donating a son in adoption,¹³ there are fewer discussions about embryo donation in Hindu literature, and the relevant narratives are dealt with later. In the context of donating a son as a gift, the *smṛti* texts clarify that people can donate only things they own such as vegetables, milk, fish, precious stones and so on. Relatives, wife and son cannot be donated as gifts.¹⁴ The narratives of Śunaśṣepa and Naciketas which deal with the subject of donating a son for the purpose of being sacrificed or killed may be relevant to this context.

Hariścandra, a king of the solar dynasty, was promised a son by Varuṇa, the aquatic god, on the condition that the newborn baby will be sacrificed to Varuṇa by being thrown into the ocean. Out of love for his child, however, Hariścandra postpones the sacrifice. Rohita, the son, upon attaining youth, comes to know about his imminent sacrifice and runs away from the palace. Noticing Rohita missing, the angry Varuṇa torments the king with a deadly disease. Rohita, a loving son, balks at the idea of sacrifice, and thinks up of a plan. He goes in search of a substitute and runs into a Brahmin, Ajīgarta, who was travelling with his wife and three sons. Rohita explains his situation and offers to barter one thousand cows for one of their sons. The offer is very tempting, but the couple are not willing to part with their eldest or youngest sons. The middle son, Śunaśṣepa, therefore, considered himself unwanted and follows Rohita. On the way, Śunaśṣepa meets the sage Kauśika (also called Viśvāmitra) and falls at his feet and explains the situation. The sage, out of compassion, teaches him

a *mantra* in praise of Varuṇa. When Śunaśśepa is tied to the sacrificial post, and the rites are about to be commenced, he chants the *mantra* taught by Viśvāmitra with faith and piety. Moved by the boy's prayers, Varuṇa grants him a long life and also forgives the king for his mistake. The boy returns to Viśvāmitra, who in turn adopts him as his own son.¹⁵

The next example of a father's sacrifice of a son is drawn from the *Katha Upaniṣad*. Uśan performs a sacrifice which requires that one give away one's entire wealth. Noticing that Uśan's donations are worthless, his son, Naciketas asks him: "To whom do you give me?" He presses his father again and again so that an angry Uśan replies: "I give you to Yama, the god of death." Naciketas goes to the abode of Yama and has to wait for three days without food or water, as Yama has gone out. Upon his return, Yama promises him three boons to atone for the three days that Naciketas had spent in his house without being fed. Naciketas requests that his father be pleased with him when he returns from Yama's place as the first boon,¹⁶ the knowledge of a fire sacrifice which leads one to heaven as the second, and knowledge of the Self as the third. Startled at the third request of Naciketas, Yama tries to tempt him with various gifts instead of granting the third boon. However, realizing that Naciketas is firm in his resolve, Yama teaches him the knowledge of the Self, which enables Naciketas to realize his Self and attain liberation.¹⁷

These two narratives dealt with the donation of a son for sacrifice. Now two other narratives which involve embryos may be introduced. The first is related to the birth of Balarāma, the elder brother of the popular Hindu God Kṛṣṇa. Kṛṣṇa's uncle, Kāṁsa, imprisoned his sister Devakī and her husband Vasudeva because of a prophecy that their eighth son will kill him. As a precaution, Kāṁsa killed all of his nephews as they were born. However, due to divine intervention, the embryo of the seventh one, Balarāma, is transferred into the womb of Rohinī, Vasudeva's first wife.¹⁸ Kṛṣṇa, the eighth child, is magically transferred to a secret place and true to the prophecy, kills Kāṁsa with the help from Balarāma.

The second narrative can be found in the form of a local legend in a temple of a goddess called Karukāttanāyaki or Karpparaṭcāmpikai (Sanskrit: Garbharakṣāmbikā, protector of the foetus) in the city called Tirukkarukāvūr (the holy city that protects the foetus) in Tamilnāṭu, South India.

According to the legend, Vedikā, the wife of a sage, conceives after many years. One day, when she is fast sleep, another sage, Īrdhvapāda, comes there begging for alms. Due to her pregnancy, Vedikā remains unaware of his arrival and fails to show hospitality. The infuriated Īrdhvapāda curses her, as a result of which she miscarries. The grief-stricken Vedikā prays to the goddess, who in turn protects the foetus in a pot and ensures the safe birth of the child.¹⁹ Even today, the goddess is worshipped by women who are in need of progeny.

The point that is worth emphasizing is that in these narratives, even in the situations wherein the sons were donated for the sake of sacrifice, the sacrifice did not take place. And the same can be said in the case of the embryos. In the case of Balarāma, the embryo is protected by being transferred to a surrogate mother, while in the second case, the grace of the goddess ensures the safety of the miscarried foetus and results in an in vitro childbirth. Thus, the Hindu ethical principle of *ahimsā* plays a leading role in all these circumstances and it is the same principle which comes in the way of donation of embryos for the sake of research.

It may now be asked: “Won’t the sacrificed embryo generate enormous merit (*puṇya*) which will lead it to a better next life?” This question takes us back to the *Gītā*, and the notion of *karma*. The *Gītā*²⁰ clearly states that an individual will undergo the results of one’s *karma*, when the *karma* is done with the intention of experiencing its results. And individuals do not experience the results of *karmas* which are performed with the intention of offering them to God. At the stage of being an embryo, the *jīva* is incapable of taking a decision and cannot be seen as sacrificing its body for the sake of greater good. In short, the embryo does not acquire any merit, but has the same status as an aborted foetus.

While the *śruti* and *smṛti* texts condemn abortion, they do not discuss what happens to the aborted foetus, which, from the perspective of religion, is a person. In the case of an aborted foetus, the *jīva* is prevented from experiencing the results of its *karma*, both good and bad, as a human being. This intervention may be described as an accidental death which the *jīva* meets with, and in this case, the death is brought by means of a weapon. In the *Garuḍa Purāṇa* we find the description that people who meet with accidental death are forced to spend the rest of their destined life period as ghosts.

Thus instead of possessing a human body, the *jīva* is forced to possess a dreadful body; and instead of surviving on various kinds of delicacies, the *jīva* is forced to survive on an obnoxious diet consisting of faeces, pus, and menstrual blood of women. After spending its destined life time as a ghost, the *jīva* reaches the abode of Yama, and is released from ghosthood.²¹

In short, according to Hinduism, the donation of embryos for research, far from being an altruistic gesture, amounts to homicide.

III: The Story of Kauravas from the *Mahābhārata*

Before going into the details about Kauravas, the story from the Hindu epic, *Mahābhārata*, may be summarized as follows:

Gāndhārī, the wife of king Dhṛtarāṣṭra becomes pregnant and bears the foetus for two years without the child being delivered. One day, out of frustration and agony, she expels the foetus with the help of her maid and is horrified to see that she has delivered a dark, clotted, dense ball of solid flesh. She bursts into tears and seeks the help of Sage Vyāsa, who had granted her a boon that she will become the mother of one hundred sons. According to his instructions, Gāndhārī collects one hundred clay pots and fills them with ghee. She then sprinkles water on the ball of flesh, which divides itself into one hundred embryos, each the size of the thumb. Vyāsa places these embryos in the pots, and noticing an extra piece, Gāndhārī expresses her wish for a daughter. Vyāsa concedes to her request and the embryos are safe-guarded in a warm place. After some time, the one hundred sons and a daughter are born to Gāndhārī.²²

The current example of the birth of Kauravas should not be considered as a case of stem cells. The birth of Kauravas—which is similar to the birth of Vedikā's child in the temple myth—may be described as the reverse procedure of what happens in an IVF. Thus, while in the IVF, the fertilization of eggs occurs in a lab and the embryo is transferred into the woman's womb, in the case of Kauravas, however, the fertilization had occurred in the womb and the embryos are transferred into clay pots. In other words, the process can be described as in vitro embryo development. As a side note, modern science has still miles to go to perform the technique that the *Mahābhārata* speaks of.

Once again, it is worth stressing the important role played by *ahimsā* involved in the birth of Kauravas and in preventing the decaying of the embryos. Hence it is not quite correct to say that the *Mahābhārata* speaks of stem cells, and thus supports the idea of HESCR. It may be added though, that this anecdote from the *Mahābhārata* may be cited in support of stem cell extraction for the benefit of humanity without causing any harm to the donor. It cannot, however, be cited in support of HESCR.

Having discussed the classical Hindu views on HESCR, I would now like to discuss the current situation about HESCR in India.

Conclusion: An investigation of Hindu scriptures and law books makes it clear that HESCR has no sanction in Hinduism. People do not acquire any merit by sacrificing their embryos for the sake of the greater good. Nevertheless, the Government of India plans to invest more money in HESCR. Currently, over thirty institutions, hospitals and industrial ventures are involved in stem cell research. Of these, six Government research centers are devoted to HESCR alone.²³ In addition, the Government supports small and large biotech companies for research in this field through the Small Business Innovative Initiative Scheme (SBIRI).²⁴ India's progress and success, and its urge to become a leading biotech nation can be gathered from the fact that out of the ten research centers considered eligible for US research funds by the US National Institute of Health, two are located in India.²⁵

While these efforts portray India as an economically developing country in the global market, the exploitation of citizens as a result of social stigma arising from infertility, poverty, illiteracy and the lack of informed consent procedures deserves mention. The following excerpts from interview materials describe the situation well:

[I]f I go and tell 1000 infertile patient (sic) who need IVF and can't otherwise afford it that I'll give them free IVF, they'll say yes. If I tell them half of their embryos I am going to use for stem cells, do you think they'll say no? They will jump at the chance and sign any piece of paper. Somebody comes to me and says I need materials for stem cell research and I will fund IVF cycles in return, what do you think I will do, say no?

Here patients are prepared to sign blank forms, forget informed consent.²⁶

In this interview DR S stands for a gynaecologist and AB for the interviewer.

DR S: Hmm, English inform consent, nobody can understand, because in India we sign papers without reading and it's the done thing...There's no Hindi equivalent or no other language equivalent, so the informed consent[is] a joke, it is a very dirty joke that the profession plays on the individual, and they couldn't be bothered if you have the babies, it doesn't matter what you do with the rest...So they're [fertility treatment seekers] extremely exploitable, so if anybody was interested in the commerce of stem cells and this, you know the future of stem cells, so anybody who's interested in the commerce of stem cells steps in...

AB: So you are virtually saying that people, individuals, couples, are not informed?

DR S: Yes, that's right, that's right, so if they want, what they give me, say, 14 embryos in a cycle and I use two, I'm left with 12 embryos, I'm reasonably sure they would, if they were ever going to conceive in the next three or four cycles of embryo transfers. So then that leaves another six embryos, that's eight embryos, what are you gonna do with the remaining ones? Stem cell research!...you see nobody knows how many embryos they have, nobody knows how many eggs they have, nobody bothers to pick up a discharge summary, nobody knows, there's no cross-checking.²⁷

The Union Health Ministry has set up the National Apex Committee for Stem Cell Research and Therapy (NAC-SCRT), not only to monitor and make policies on stem cell use, but also to examine the various issues involved in each and every HESCR. Thus, it is now mandatory for all those involved to be registered with NAC-SCRT to be granted permission for their research.²⁸ While these rules might prevent bio-piracy, the ill effects of HESCR cannot be avoided. At the same time, research may be focused to improve the pluripotentiality of adult and cord blood stem cells thereby minimizing the use of embryonic stem cells. In addition, it is the responsibility of religious leaders, specialists and professors, to educate both the government and the people, especially Hindus in particular, about the ill effects of HESCR. And if possible, researchers could create only the

required number of embryos that have to be planted in the woman's womb. If this is not practical, then the only possible way to avoid killing of those excess embryos is to leave them as they are instead of disseminating them in the name of research. This will lead to a situation like a natural death, which is much better than killing them in the name of HESCR. However, given the popularity of HESCR,²⁹ it is possible to say that just as the voice of Hinduism has gone unheard in the case of abortion, the same might happen in the case of HESCR as well.

References

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⁵Ibid., p. 35.

⁶Julius Lipner, On Abortion and the Moral Status of the Unborn, in Harold G. Coward, Julius J. Lipner, and Katherine K. Young, *Hindu Ethics: Purity, Abortion and Euthanasia*. (Albany: State University of New York Press, 1989, p. 55).

⁷Ibid., p. 43.

⁸ Kane, PV. *History of Dharmaśāstra*. Poona: Bhandarkar Oriental Research Institute, 1974, vol. 2, pt 1, 2d. ed., pp. 220-222.

⁹Julius Lipner, *op. cit.*, p. 44.

¹⁰Ibid., pp. 45-46.

¹¹Ibid., pp. 49-50.

¹²Ibid., p. 59.

¹³Kane, *Dharmaśāstra*, 1973, vol. 3, 2d. ed., pp. 662-699.

¹⁴Kane, *Dharmaśāstra*, 1974, vol. 2, pt 1, 2d. ed., pp. 507-508, 1974, vol. 2, pt 2, 2d. ed., pp. 849-850, vol. 3, p. 471.

¹⁵Śrīmad Bhāgavatam, trans. Kamala Subramaniam. Bombay: Bharatiya Vidya Bhavan, 1979, pp. 250-254.

¹⁶Govindaśāstri in his notes on Śaṅkara's commentary on Kaṭha Upaniṣad I.10 provides the explanation that Naciketas asks for this boon as he fears that his father might reject him because he has returned from Yama's place and hence is possessed by some ghost. See *Ten Principal Upaniṣads with Śaṅkarabhāṣya* in Works of Śaṅkarācārya, vol. 1. Delhi: Motilal Banarsidass, 1992. See also note 21 below.

¹⁷Kaṭha Upaniṣad in Patric Olivelle, trans. *The Early Upaniṣads*. New York: Oxford University Press, 1998. pp. 372-403.

¹⁸Śrīmad Bhāgavatam, p. 310.

¹⁹<http://www.sri-karparakshambigai-temple.com/> (accessed 11th of July, 2018).

²⁰Bhagavadgītā (with the commentary of Śaṅkarācārya), trans. Gambhirananda. Calcutta: Advaita Ashrama, 1997, III. 9 & II. 47.

²¹*The Garuḍa Purāṇa*, in J. L. Shastri, ed. *Ancient Indian Tradition and Mythology* (Delhi: Motilal Banarsidass, 1980), pt 3, pp. 833, 836-838, 830. It is in this connection that Naciketas asks the first boon from Yama.

²²Swasti Bhattacharyya, *Magical Progeny, Modern Technology: A Hindu Bioethics of Assisted Reproductive Technology* (Albany: State University of New York Press, 2006), pp. 37-38.

²³Alka Sharma, "Stem Cell Research in India: Emerging Scenario and Policy Concerns," *Asian Biotechnology and Development Review* 8, no. 3 (2006): p. 46-47.

²⁴Ibid., 43.

²⁵Ganapati Mudur, "India to Tighten Rules on Human Embryonic Stem Cells Research," *BMJ* 323 (2001): p. 530.

²⁶Aditya Bharadwaj and Peter Glasner, *op. cit.*, p. 76.

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²⁸http://articles.timesofindia.indiatimes.com/2011-03-19/india/29145715_1_cell-research-cell-lines-human-embryonic-germ-cells (accessed 11th of July, 2018).

²⁹Recent research shows that embryonic stem cells can be safely and effectively used to treat blindness. See "Stem cells to treat blindness appear safe," *The Hindu* dated October 16, 2014.